AUSTRALIA

In February 1939, the British Government requested that representatives from the more technically advanced commonwealth nations come to England to be extensively briefed on the highly secret development of RDF (radar). Dr. David Martyn of the Australian CSIR represented Australia.

David Martyn

David F. Martyn (1906-1970) was a native of Scotland and earned a doctorate in physics from the University of London in 1928. The Australian Radio Research Board had been formed in 1927 under the Australian Council for Scientific and Industrial Research (CSIR), Martyn moved to Australia in 1929 to become one of four research officers employed by the Board. He worked first at the University of Melbourne, then years later he moved to the RRB's other group at the Electrical Engineering Department at the University of Sydney where Prof. (later Sir) John Madsen was professor. His work there centered on experimental and theoretical studies of the ionosphere. On a visit to England in 1936, he became generally acquainted with the work on RDF being done by Robert Watson-Watt and his team; on his return, he successfully urged that a similar project be started in Australia. Thus, Martyn was a natural selection to be sent to England for the 1939 briefings.

When Martyn returned to Australia, he was appointed in September 1939 Officer in Charge of the new Radiophysics Laboratory (RPL) being formed as a unit of the CSIR, develop RDF technology for Australia. On September 3, 1939, Australia had declared war on Germany.

Highly secure facilities were set up on the campus of the University of Sydney. Dr. Jack H. Piddington (1910-1997) was made responsible for system development. A native of Australia and a graduate Sydney University earned his medalist, Piddington had doctorate at the University of Cambridge under Professor E. V. Appleton.

John Piddngton

Dr. Joseph L. Pawsey, an Australian who had previously been with EMI's Television Group in England, was hired to lead technical research.

The first efforts at the RPL were in assessing the British RDF for application in Australia. It was concluded that the large coast of Australia needed a different type of system.

ShD Radar at Dover Heights

In 1938, Piddington had built a pulse-transmission system intended for ionospheric studies, but his appointment to the RPL and the outbreak of war changed the direction of his work. His first RPL project was developing a 200-MHz (1.5-m) shore-defense RDF system for the Australian Army. Designated ShD (Shore Defence), three pre-production models of the system (CA No.1 Mk I) were made by RPL and AWA Ltd; the first was tested at Sydney Heads in Sydney in May 1940. Production versions of this unit, designated CA No.1 Mk II, were made by the PMG's Department with aerials by NSW Government Railways and were eventually installed by the Army at 40 ports around Australia.

The Air Council of Canada agreed to open a school for training RDF personnel from throughout the Commonwealth. This school (RAF #31) opened in Clinton, Ontario, in May 1941, with a number of officers and enlisted personnel from Australia in attendance (So far as I know, no RAAF personnel took part – WM.). Realizing the need for indigenous training, Australia established its own RDF School in July 1941. Ancillary basic training courses of six months for RDF officers were provided by Sydney University and four-month courses for maintenance mechanics by Melbourne Technical College.

With the Japanese attack on Pearl Harbor, the need for an air-warning system became urgent. For the Royal Australian Air Force (RAAF), Piddington's team designed and built a 200-MHz (1.5-m) system by modifying the ShD equipment in five days. Designated AW Mark I, the set was tested for some months at Dover Heights using the existing ShD antenna. In the meantime, the RAAF ordered six production versions, the first three urgently assembled at RPL for dispatch to Port Kembla, Darwin and Port Moresby then sent to Darwin for installation. Unfortunately, it was not yet operational when the Japanese devastated that city in their initial attack on Australia on February 19, 1942, in fact, not all of it had even arrived in Darwin at that time. However, on 22 March, the set was became operational and detected a large incoming raid. While still 20 miles offshore, the raiders were successfully intercepted by U.S. fighter aircraft. Eventually, the RAAF established an integrated

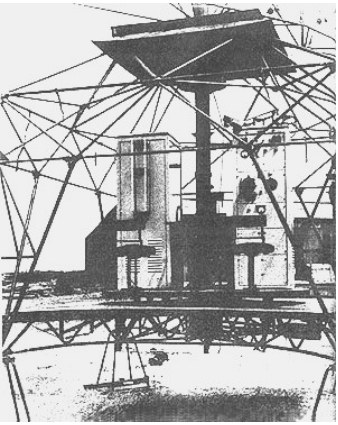
network of AW and other radar sets and successfully repelled the Japanese attacks.

After three AW sets were made by the RPL, production was turned over to HMV Gramophone (an EMI company). The NSW Railways Engineering Group developed a lightweight antenna, making the set air transportable. Called simply the LW/AW (eventually in three versions with minor modifications: Mk I, Mk IA & Mk II), 56 of these sets were used by the Australian forces, 60 by the U.S. Army in island landings in the South Pacific, and 12 by the British in Burma. The antenna was hand-cranked, and the operators sat in a tent under the structure.

In early 1942, troops (including the law of the author) arriving in Australia. SCR-268s brought troops were turned Australians, who them to become Air Warning Devices These 200-MHz were deployed at sites around In time, other radar were supplied from

LW/AW Radar

U.S. Army brother-in- started Several by these over to the rebuilt Modified (MAWDs). systems seven Australia. systems Great Britain and America. The Royal Australian Navy had essentially all types of British-built radars on their vessel.



LW/AW Uncovered

In June 1942, Martyn became the head of a special operational research group examining radar problems; Dr. Frederick W. G. White, who had recently moved from New Zealand, then became Director of the RPL. During 1943-44, the RPL involved a staff of 300 persons working on 48 radar projects, many associated with improvements on the LW/AW. Height-finding was added (LW/AWH), but not used operationally. Efforts to make from it a ground-control intercept system were not successful, and an LW/GCI system was developed based on the Canadian SCR 602 T6. There was also a unit for low-flying aircraft (LW/LFC) developed but not used operationally. Near the end of the war in 1945, the RPL was working on a microwave height-finding system (LW/AWH Mark II).

Dr. Edward G. Bowen, one of the three original developers of RDF in Great Britain, came to Australia in January 1944 and joined the RPL as chief of the Radiophysics Countermeasures. Projects to detect, locate, and jam Japanese radars ensued. Following the war, Bowen led a major effort in establishing a comprehensive research effort in radio astronomy in Australia. Dr. Martyn became the Director of the RRP's Atmospheric Research Station in New South Wales. There he made fundamental improvements in knowledge of the ionosphere. Like Bowen, Dr. Piddington turned to radio astronomy, first developing microwave interferometers then later in theoretical analysis. Dr. Pawsey also became a well-known radio astronomer and was President of the International Radio Astronomy Commission. Dr. White eventually became Chairman of the CSIR and was knighted in 1962.